THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A two speed transmission system for a marine craft comprising:

an input shaft;

an output shaft coaxial with the input shaft;

a first gear train for transmitting drive from the input shaft to the output shaft at a first gear ratio;

a second gear train for transmitting drive from the input shaft to the output shaft at a second gear ratio;

a first friction clutch operable to engage/disengage the first gear train; and

a second friction clutch operable to engage/disengage the second gear train;

wherein the input shaft is isolated from driving interconnection with the output shaft by disengagement of both clutches; and

wherein in shifting between the first gear ratio and the second gear ratio one of the friction clutches is disengaged using controlled slippage while the other friction clutch is engaged using controlled slippage.

2. A two speed transmission system as claimed in claim 1, wherein the first gear train includes a lay shaft which is in driven engagement with the input shaft when the first friction clutch is engaged for operation at the first gear ratio, and wherein the lay shaft is isolated from direct driven engagement with the input shaft by disengagement of the first friction clutch.

3. A two speed transmission system as claimed in claim 2 wherein the output shaft and input shaft are linked via the lay shaft which extends parallel to the input and output shafts.

4. A two speed transmission system as claimed in claim 3, wherein gears of the input shaft and output shaft for transmitting drive to and from the lay shaft are located between the friction clutches and an output end of the output shaft.

5. A two speed transmission system as claimed in any preceding claim wherein a one-way clutch means is incorporated in the first gear train such that the first gear train is able to overrun when the second gear train is transmitting drive.

6. A two speed transmission system as claimed in any one of the preceding claims wherein the second friction clutch is operable to engage the output shaft in direct 1:1 drive with the input shaft.

7. A two speed transmission system including:

an input shaft;

an output shaft coaxial with the input shaft;

a lay shaft arranged parallel to the input and output shafts;

a first gear train for connecting the input shaft to the lay shaft for driving the same via the input shaft;

a second gear train connecting the lay shaft to the output shaft;

a first clutch means for connecting the input shaft to the output shaft via the lay shaft giving a first gear ratio other than 1:1; and

a second clutch means for connecting the input shaft to the output shaft at a second gear ratio;

wherein the input shaft is isolated from driving interconnection with the output shaft by disengaging both the first and second clutch means; and

wherein in shifting between the first gear ratio and the second gear ratio one of the clutch means is disengaged using controlled slippage while the other clutch means is engaged using controlled slippage.

8. A two speed transmission system as claimed in claim 7, wherein the gear trains are selected to provide a higher gearing of the lay shaft when the second clutch means is engaged.

9. A two speed transmission system as claimed in claim 7, wherein the gear trains are selected to provide a lower gearing of the lay shaft when the second clutch means is engaged.

10. A two speed transmission system as claimed in claim 7, wherein disengagement of the first clutch means isolates the lay shaft from direct driven engagement with the input shaft.

11. A two speed transmission system as claimed in any one of the preceding claims further including a control system for controlling the first and second clutches.

12. A two speed transmission system as claimed in claim 11 further including sensors for supplying information to the control system, the sensors including one or more of clutch pressure sensors, sensors measuring the speed of the input shaft and output shaft respectively and sensors providing information relating to the position of gears in the gear trains.

13. A two speed transmission system as claimed in claim 11 further including one or more control valves and electro-hydraulic solenoids to provide controlled clutch slip for docking and other functions where very low speeds of the order of a few knots may be desired.

14. A watercraft incorporating a two speed transmission system as claimed in any one of the preceding claims.

15. A watercraft as claimed in claim 14 wherein the transmission is incorporated as part of a stern drive unit.